What is claimed is:

1. A method for analytical imaging of target entities, which method comprises:
    a. obtaining a sample suspected of containing said target entities,
    b. magnetically labeling said target entities with magnetic particles that are specific for said target entities,
    c. magnetically manipulating said target entities towards a collection surface,
    d. illuminating said collected target entities,
    e. collecting sequential sub-images of said collected target entities, and
    f. re-combining said sub-images to construct a complete image of said collected target entities.

2. The method of Claim 1, in which said target entities are cells.

3. The method of Claim 2, in which said cells are tumor cells.

4. The method of Claim 1, in which said magnetic labels are colloidal magnetic particles.

5. The method of Claim 4, in which said colloidal magnetic particles are specific for the Epithelial Cell Adhesion Molecule (EpCAM).

6. The method of Claim 1, in which said collection surface comprises parallel Nickel lines on a glass substrate.

7. The method of Claim 1, in which said illumination step further comprises the use of multiple wavelength light sources.

8. An apparatus for analytical imaging of target entities, said apparatus comprising:
    a. a sample chamber which includes a collection surface,
    b. an arrangement of magnets capable of manipulating magnetically labeled target entities towards said collection surface,
    c. at least one light source,
    d. a camera capable of capturing sub-images of said collected target entities, and

e. a computer capable of re-combining said sub-images to construct a complete image of said collected target entities.

9. The apparatus of Claim 8, in which said collection surface comprises Nickel lines on a glass substrate.

10. The apparatus of Claim 8, in which said light source is a laser.

11. A method for automatically scanning magnetically and detectably labeled micron-sized objects located on a planar surface whereon said objects are aligned in a linear array by magnetic means, which method comprises:

(a) loading a liquid sample containing said labeled objects into a chamber bearing a plurality of parallel magnetizable lines on said planar surface, wherein said labeled target objects have a size range of 2 to about 20 um, preferably about 5 to about 15 um;

(b) placing said chamber on a movable magnetic x-y stage of a microscope, thereby to generate a magnetic field in proximity of said magnetizable lines, thus aligning and positionally immobilizing said objects, if present, between adjacent magnetic lines in a linear array along the x-axis;

(c) moving said stage bearing said aligned objects along the x-axis in a digitized stepwise manner into the path of a stationary focused light beam, said light beam sequentially illuminating said aligned objects at a plurality of wavelengths each characteristic for exciting a detectable label on said target and non-target objects, thereby to generate a plurality of sequential emitted signals corresponding to segmented sub-images of said objects encoded to the specific x-y positions of the said sub-images on said stage;

(d) acquiring and storing the sequential segmented sub-images by means of a CCD device coupled to a frame grabber at a rate commensurate with the scanning speed of the CCD device;

(e) storing said sequential sub-images in computer memory indexed to the respective x-y-positions of said sub-images on said stage; and

(f) merging the stored sub-images of said objects to generate a reconstructed full image of each detected object, thereby to permit locating, enumerating, identifying, and classifying said objects as either target or non-target objects.

12. The method of claim 11 in which the objects are magnetically labeled by means of colloidal magnetic particles.

13. The method of claim 12 in which said colloidal magnetic particles have diameters of 50 to 300nm.

14. The method of claim 11 in which the objects are labeled with one or more detectable fluorescent substances each substantially specific for a detectable marker on said objects.

15. The method of claim 14 in which the detectable labels are selected from the groups of organic and inorganic fluorescent substances.

16. The method of claim 11 in which the objects are cells.

17. The method of claim 11 in which said magnetic lines are about 20 to 40um wide and are separated by a distance of about 10 to 20um.

18. The method of claim 11 in which said magnetic lines are composed of a paramagnetic material.

19. The method of claim 11 in which said laser light sources have wavelengths appropriate for exciting said fluorescent substances on the labeled objects.

20. The method of claim 1 in which the CCD has a frame rate commensurate with the scan speed of the stage, thereby to maintain a resolution of at least 0.2um.

21. An apparatus for automatically scanning magnetically and detectably labeled micron-sized objects on a planar surface whereon said objects are aligned in a linear array by magnetic means, comprising:

(a) one or more laser light sources;

(b) a polarized beam splitter with feedback detector;

(c) a dichroic mirror assembly;

(d) a focusing lens assembly;

(e) a sample chamber having affixed thereto at least two parallel magnetizable lines in the x-direction thereby to form a linear array, said sample chamber being inserted into a magnet system stably affixed to said x-y stage, thereby providing means for collecting, aligning and transporting said collected labeled objects into said focused light beam in a stepwise and digitized mode;

(f) means for acquiring the sequential digitized signals images emanating from said labeled objects as digitized sub-images by means of a CCD camera and one or more PMT tubes;

(g) means for storing said acquired sub-images in computer memory indexed to the corresponding z-y stage position; and

(h) means for merging said grabbed sub-images of said objects to reconstruct full images of said objects on said linear array.

22. The apparatus of claim 21 wherein the parallel magnetic lines on said linear array are spaced about 10 um apart.

23. The apparatus of claim 21 wherein the magnetic lines are composed of a paramagnetic material.

24. The apparatus of claim 21 wherein the paramagnetic material is nickel.

25. The method of claim 21 in which the CCD has a frame rate commensurate with the scan speed of the stage, thereby to maintain a resolution of at least 0.2um.